



Utility Policy

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REGISTRATION

Please complete this form and return it to:

**Mr. Nelson Smith
Utilities Section
Maryland State Highway Administration
7450 Traffic Drive, Building #4
Hanover, MD 21076**

You will be sent replacement pages for any revisions of the UTILITY POLICY.

Thank you.

NAME:

TITLE:

COMPANY:

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UTILITY POLICY CHANGES
EXECUTIVE SUMMARY

Following are the major changes made to the utility policy. The revised policy is based upon code of Federal Regulations 23, Highways Subparts A and B Subchapter G, part 645 and part 645.

CATV

Cable television will be allowed to occupy SHA rights of way under the same controls as other utilities. The definition of a utility was changed to include cable television.

LONGITUDINAL OCCUPANCY OF CONTROLLED ACCESS EXPRESSWAYS

Generally, installation of utilities longitudinally in the rights of ways of expressways and highways programmed to be reconstructed as expressways is prohibited in the policy. Under unusual conditions as defined in the Federal FHPM and latest AASHTO policy longitudinal occupancy may be approved. FHWA has delegated approval authority of longitudinal occupancy to the state. This will satisfy the FHWA requirement that all states adopt a policy by June 30, 1989 concerning longitudinal occupancy of freeways and expressways. Utilities in existence at the time a highway is converted to an expressway may generally remain in place if they do not have to be services from the freeway roadway.

**LONGITUDINAL OCCUPANCY OF HIGHWAYS OTHER
THAN EXPRESSWAYS AND FREEWAYS**

Longitudinal Occupancy of highways other than expressways and freeways with partial control of access is permitted when a utility gets an exemption from the Chief Engineer based upon alternate locations being cost prohibitive or technically infeasible.

Utilities are allowed to be installed longitudinally where access controls do not exist. This also applies to short sections of access controls that are not part of a system. Underground utilities must be installed outside the ditch line. No above ground obstruction can be placed in the clear roadside area. Poles are to be placed at the right of way line wherever possible.

UTILITY CROSSING

Utilities are permitted to cross expressways and other highways either through sleeves or conduits or by the use of thicker walled or local government.

PRIVATE UTILITIES

The policy has been revised to allow utilities that do not serve a public purpose to be placed on SHA rights of way provided the section within the right of way is installed and maintained by a public utility or local government.

LIABILITY

It was agreed that it was not necessary to make any changes in the utility policy to limit SHA liability. The office of Law will place appropriate wording in future permits.

UTILITY

POLICY

JULY 1989

Maryland State Highway Administration

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CHAPTER 1
INTRODUCTION

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1.01 PURPOSE

It is in the public interest for utility installations to be accommodated on the rights-of-way of state highways. However, since the manner in which these accommodations are carried out can have a significant effect upon the function of the highways, it is necessary for utility occupancy and use of the rights-of-way to be regulated to ensure that the following requirements are met:

Free and safe flow of traffic

Provisions for maintenance and future expansion of the highways

Compliance with applicable Federal, State and local laws and regulations including this utility policy.

Evaluation of any loss of productivity of agricultural land due to denial of a particular application for utility accommodation.

1.02 DEFINITION OF A UTILITY

Utility - a privately, publicly, or cooperatively owned line, facility or system for producing, transmitting, or distributing communications, cable television, power, electricity, light, heat, gas, oil, crude products, water, steam, waste, storm water not connected with highway drainage, or any other similar commodity, including any fire or police signal system or street lighting system, which directly or indirectly serves the public. The term utility shall also mean the utility company inclusive of any wholly owned or controlled subsidiary.

A Utility must be under the jurisdiction of the Maryland Public Service Commission, the Federal Communications Commission, covered by the Cable Communications Policy Act of 1984 codified as 47USC Section 541 and 556, or governed by Title 9 of the Environmental Articles of the Annotated Code of Maryland to be recognized as a Utility by the SHA.

1.03 SCOPE

This policy covers all utility accommodation within the SHA rights-of-way or SHA owned properties. Utility installation should be located to minimize the need for later adjustments, to accommodate planned future highway improvements and to permit access for servicing such installation with minimum interference to highway traffic.

1.04 APPLICABILITY

This policy applies to all utilities, privately or publicly owned, including local governments.

Utilities shall not locate within SHA rights-of-way without a special permit for each location. Private installations must be installed and maintained by a public utility or local government. The District Engineer will be the approval authority for these permits.

1.05 AUTHORITY

The State Highway Administration exercises control of the utility occupancy of Maryland State Highway owned land by mandate of the Annotated Code of Maryland, Transportation Article, Section 8-646.

a. In general -- Except as permitted by this section or in accordance with a permit obtained from the Administration, a utility company may not:

- (1) Make an opening in any State highway;
- (2) Place any structure on any State highway;
- (3) Change or renew any structure placed on any State highway;
- (4) Dig up any State highway for any purpose, including the placement of pipes, sewers, poles, wires or rails;
- (5) Plant or remove any tree on any State highway; or
- (6) Place any obstruction on any State highway.

b. Issuance of permit:

- (1) The Administration may issue a permit for work otherwise prohibited by subsection (a) of this section.
- (2) Work done under the permit shall be performed to the satisfaction of the Administration and under its supervision.
- (3) The utility company to whom the permit is issued or by whom the work is done shall pay the cost of replacing the highway as required by the S.H.A.
- (4) The permit is granted subject to the provision that the utility's facility will be removed or relocated by the applicant at no cost to the State Highway Administration when required for the improvement of the highway except where the Utility has a prior right.
- (5) The applicant, upon request of the District Engineer, agrees to reimburse the State Highway Administration for actual cost of any specifically assigned inspection incurred under the permit.
- (6) In emergencies that threaten public safety a permit will not be required before beginning work but traffic on all highways must be maintained in accordance with the SHA Freeway Incident Traffic Plan.

- c. On Federal-aid highway projects where the State Highway Administration does not have legal authority to regulate highway use by Utilities and private lines, it is the policy of the State Highway Administration to enter into formal agreements with local officials who have such authority. The agreements will incorporate by reference the SHA's latest approved utility accommodation policy. The project agreement between the State Highway Administration and the Federal Highway Administration on all such Federal-aid highway projects shall contain a special provision incorporating the formal agreements with the responsible local officials.

The Federal Highway Administration has authority over all highways utilizing Federal funds. The primary instrument of authority is CFR 23, Highways. Subparts A and B of CFR 23 are available as FAPG Subchapter G, part 645 and part 646. These FAPGs are applicable to Maryland roads regardless of funding status.

Two AASHTO publications are incorporated into this policy by reference:

- (1) A Policy on the Accommodation of Utilities Within Freeway Right-of-Way.
- (2) A Guide for Accommodating Utilities Within Highway Right-of-Way.

1.06

ENFORCEMENT

The Annotated Code of Maryland, Section 8-646, directs that "work done under the permit shall be performed to the satisfaction of the Administration and under its supervision". This SHA responsibility of review and supervision is accompanied by certain enforcement powers which are set forth in the following provisions:

- (A) The SHA has the power to suspend utility work, on any project, wholly or in part, if in its judgment, the utility fails to comply with the terms of the occupancy agreement or of the permit.
- (B) The Annotated Code of Maryland, Section 8-646, states that "The Administration may apply to the Circuit Court in the subdivision in which the violation occurred or is threatened for appropriate injunctive relief." The Chief Engineer has the authority to initiate this action.

1.07 MARYLAND HIGHWAY FUNCTIONAL CLASSIFICATIONS

Expressways - Divided highways, with full control of access, on which all cross-roads are grade separations and all entrance and exit maneuvers are via interchange ramps. Expressways are primarily designed for high speed, long distance travel with unrestricted movement of traffic and no direct access to abutting properties.

Arterials - High type highways, other than expressways, which are on a continuous route, with a high degree of continuity, and which serve as the major carriers of through traffic for any given corridor. Arterials are primarily designed for through traffic but consideration is also made for access to adjacent properties. Partial control of access can be used to give preference to through traffic, but at grade intersections, channelization or interchanges may be provided.

Collectors - An intermediate type of road or street serving as a connector between two arterials or between arterials and local streets. Collectors have the combined function of providing direct access to abutting properties and accommodating limited volumes of through traffic. Collectors may be on a continuous route but are not major carriers of through traffic.

Local - A road or street, other than a State Highway, primarily serving as direct access to abutting properties. Low traffic volumes and low speeds are desirable features and through traffic is often discouraged through the use of "T" intersections, cul-de-sacs, curvilinear alignments, and other impediments to the continuous flow of traffic.

1.08 CONTROLLED ACCESS HIGHWAYS

The higher classifications of highways will usually incorporate access control. These controlled access designations severely restrict the use of highway rights-of-way for any purpose other than its primary function. Controlled access limits are denoted on SHA drawings and plats by the words "Right of Way Line of Through Highway" at the right-of-way line or on a line inside the right of way line.

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2.01 DISTRICT-UTILITY INTERACTION

The utility company shall coordinate all work with the District Engineer of the District in which the work will take place. Plans or bills submitted directly to headquarters without his approval will be returned to the District Engineer.

2.02 AGREEMENTS

The SHA and the utility shall agree in writing on their separate responsibilities in financing and accomplishing relocation work, either through a master agreement or through agreements for individual projects.

The agreements shall be approved by a duly authorized official of the utility, and by the Administrator or his designated representative.

2.03 ABUTTING PROPERTIES

The SHA shall not be a party in any negotiations between the utility and abutting property owners.

2.04 PERMIT

Applications for permits shall be signed by a duly authorized representative of the Utility making the request and submitted to the District Engineer in whose District the work is being performed.

See the Appendix for a map of the Engineering Districts and the addresses of the District Engineers.

The applications shall provide complete information as to the nature of the work to be done and the impact of the work on the highway and its appurtenances.

Permits are issued by the SHA under the signature of the District Engineer.

A copy of the permit must be available at the job site at all times.

Permits issued by the SHA do not relieve utilities from compliance with any applicable Federal, State or local government regulations. It shall be the duty of the permittee to obtain any additional permits required by other agencies or by property owners where the SHA has only a highway easement. District Permit Inspectors will check to ensure compliance with SHA permit requirements.

2.05 EXCEPTIONS

Any exceptions to this policy must be submitted by the District Engineer to the Chief Engineer for approval. Any exception to this policy for a proposed use or occupancy of the right-of-way of a Federal-aid highway project must also receive concurrence from the FHWA.

2.06 DESIGN AND SPECIFICATIONS

A. General

Sections of utility facilities crossing highways will be constructed with materials more durable than usual to ensure a long, trouble-free service life and to minimize the probability of interference to the highway's primary function.

As minimums, the following standards and codes will be observed where applicable:

- U.S. Department of Transportation - Pipeline Safety Standards
- Maryland Public Service Commission
- MSHA Utility Policy Manual
- Standards for Highways & Incidental Structures - MDOT
- American Petroleum Institute
- American National Standards Institute
- American Society for Testing and Materials
- American Water Works Association
- American Gas Association
- American Welding Society
- American Society of Mechanical Engineers
- American Society of Civil Engineers
- National Electric Code
- National Electric Safety Code
- National Association of Corrosion Engineers
- National Fire Protection Association
- Standard Specifications for Construction & Materials - MDOT

Guy wires within 6 feet of the ground will be sheathed in heavy high visibility plastic tubing of 1-1/2" minimum diameter.

Wood poles will be used except where steel poles are necessary to eliminate dangerous or difficult guying. Damaged or rotted poles will be replaced as quickly as possible.

The utility's design of any manhole, vault or similar underground appurtenance is subject to the prior approval of the SHA. On crossings, such a facility shall normally be located between the ditch and right of way line with the top elevation of the cover of any access opening being level with or below the finished grade.

Such facilities must be constructed in a manner and at locations that will not interfere with maintenance of the highway.

Any appurtenance to a utility's underground facility which extend above the surface of the ground must comply with the SHA's safety grading.

B. PIPING

1. Pipe utilized for the transportation of gases other than natural gases, all petroleum products, all other flammable products and explosive or hazardous substances shall be made of steel. Low and medium pressure natural gas distribution lines may be made of either steel or polyethylene.
2. Other utilities may be transported in pipe meeting the utility standard for the material being transmitted.
3. When crossing a highway without sleeving, the pipe from right-of-way line to right-of-way line of the highway will be the same nominal diameter and made of the same or higher yield strength material compared to the pipe outside of the SHA right-of-way, and, will either have its wall thickness increased to the next higher standard wall thickness or for steel pipe have a design factor 20% lower than that required by the US DOT Pipeline Safety Standards to obtain the higher yield strength.

The pipe classification, minimum yield strength, wall thickness, coating description, and joint type for the system, both inside and outside of the SHA right-of-way, shall be included on or with the utility plans. Maximum expected system operating pressure shall also be stated.

4. All ferrous pipe surfaces shall be protected against corrosion by a combination of factory applied coating(s) with related field measures as required and a cathodic protection system.
5. Field welds shall be made and inspected in accordance with USDOT Pipe Line Safety Standards CFR Title 49, Part 192, Subpart E.
6. All joints shall be protected and electrically insulated from the surrounding soil in a manner at least equivalent to the protection and insulation given to the pipe proper.

7. Generally, the pipe will have to be jacked across the highway right-of-way. Protection shall be provided to the coated surface of the pipe by having a mill applied coating as appropriate to the pipe size.

An alternate method of installing concrete pipe shall be to jack a casing pipe (sleeve) across the highway. The concrete pipe (carrier) would then be grouted into place within the casing. This method includes the assumption that the concrete pipe being used does not require a cathodic protection system to protect its metal elements.

C. TESTING

1. All installed piping within the SHA right-of-way will be tested as required by USDOT Pipe Line Safety Standards.

2.07

INSPECTION

SHA inspectors are assigned the responsibility and authority to conduct inspections of utility work sites, and to obtain and record appropriate data.

The utility shall provide the SHA inspector with an intended work schedule and shall inform the SHA inspector of any subsequent changes to the schedule.

2.08

SAFETY

Utilities will take precautions to protect the travelling public. No lane closures during the peak hours will be allowed. In some cases it may be necessary to perform the work during off peak times or at night.

No access shall be permitted onto SHA rights-of-way of controlled access roadways for purposes of construction, maintenance, or expansion of an existing installation unless the SHA determines there is no feasible alternative.

All equipment and material shall be removed from the SHA rights-of-way, or located a minimum of 30 feet from the edge of the existing traveled pavement of SHA roadways during non-working hours and when not being used in daily construction and maintenance operations. The SHA may permit equipment and material to be stored closer than 30 feet from the edge of the traveled pavement when there is no practical alternative. Equipment and material stored closer than 30 feet from the pavement must be protected by temporary concrete traffic barriers.

Private automobiles and non-essential construction vehicles shall not be parked on SHA rights-of-way. It shall be the responsibility of the permittee to transport workers to the job site from a separate parking facility procured by the permittee.

Mud and debris tracked or spilled on the roadway shall be removed promptly, and precautions shall be taken, especially in freezing temperatures, to keep water off the travelled lanes.

Appropriate protective measures, approved by SHA, including warning signs and barricades, shall be placed at all excavations.

Excavations in the roadway, shoulders or sidewalk shall not be left open overnight, or at any time when work is not in progress in the immediate area. Steel plates may be used over excavations at locations approved by the SHA.

2.09

SCENIC ENHANCEMENT

The type and size of utility facilities and the manner and extent to which they are permitted along or within highway rights-of-way can materially alter the scenic quality of highway roadsides and adjacent areas. Additional controls are applicable in certain areas that have been acquired or set aside for their scenic quality. Such areas include scenic strips, overlooks, rest areas, recreation areas, the right-of-way of highways adjacent thereto, and the right-of-way of sections of highways which pass through public parks and historic sites.

New underground utility installations may be permitted within such lands where they do not require extensive removal or trimming of trees or other natural features visible to the highway user or do not impair the visual quality of the land being traversed.

New aerial installations should be avoided at such locations where there is a feasible and prudent alternative.

2.10

TREE AND SHRUB SPRAYING, CUTTING AND TRIMMING

Spraying, cutting and trimming of trees and shrubs by the utility within SHA right-of-way is prohibited without written permission of the District Engineer. The utility shall also obtain all other necessary permits.

2.11

RESTORATION AND HIGHWAY PROTECTION

A. ROADS AND PRIVATE ENTRANCES

Roads and private entrances shall be restored in accordance with Standard No. MD-578.01 or as specified in the permit. Existing concrete entrance aprons, if damaged, shall be replaced completely using concrete Mix No. 2. The thickness of the concrete apron shall be a minimum of 10 inches for commercial entrances and 6 inches for residential entrances.

B. SHOULDER AREAS

Shoulder areas shall be replaced to the satisfaction of the District Engineer. Material shall be applied and compacted in accordance with the SHA Standards and Specifications for Construction and Materials, January 1982, as amended.

C. CURBS AND SIDEWALKS

Curbs and sidewalks shall be replaced with the same material, construction, and finish as the originals. All disturbed sections or blocks shall be replaced in their entirety. Sidewalks shall be at least 4 inches thick.

D. GUARD RAILS

Guard rails shall be replaced in accordance with the current SHA Book of Standards.

E. FENCES

Fences shall be replaced in accordance with the SHA Standard Specifications for Construction and Materials, and the SHA Book of Standards.

F. DRAINAGE STRUCTURES

All drainage facilities must function, not only after work is completed, but while work is in progress. Storm drain facilities and concrete ditches damaged during construction shall be reconstructed "in kind" in accordance with the SHA Standard Specifications for Construction and Materials, and the SHA Book of Standards. Disturbed, unpaved drainage ditches shall be restored to their original condition by resodding or seeding and mulching as determined by the permit, and shall be left in an orderly condition. Stream beds shall be left free of debris.

G. TOPSOIL AND GROUND COVER

The utility shall take all necessary steps during construction to minimize erosion and siltation onto the right-of-way. Disturbed areas shall be topsoiled, seeded and fertilized. Topsoil removed during excavation shall be stockpiled and subsequently replaced to a depth of 2 inches. All desirable trees, shrubs, and other plant materials shall be replaced to the satisfaction of the District Engineer.

H. ADDITIONAL RESTORATION

Signs, delineators, markers, steps, and other miscellaneous structures that are disturbed by the construction shall be replaced or restored to the satisfaction of the District Engineer. SHA signs, delineators, and guard rails shall not be removed until immediately prior to the excavating, and shall be replaced in their original locations immediately after the backfill operations. If damaged, they shall be replaced, in accordance with the current Standard Specifications for Construction & Materials, the Book of Standards, and the Manual on Uniform Traffic Control Devices.

I. PROTECTION OF HIGHWAYS

No equipment with metallic treads shall be driven or towed on any road surface or surfaced shoulder.

Material or equipment not provided with rubber-tired wheels shall not be dragged or skidded across paved surfaces.

2.12

UTILITY IDENTIFICATION AND CONSTRUCTION SIGNS

A. IDENTIFICATION SIGNS

To facilitate the notification of proper authorities in an emergency, the utility shall post identification signs at every work site in accordance with SHA Maintenance Memorandum 71.1-11, as amended, titled "Identification Signs at Utility Work Sites".

B. CONSTRUCTION SIGNS

When steel plates are used to bridge open excavations in traveled lanes or on shoulders, the utility shall place warning signs in accordance with the MUTCD.

All signing will conform to specifications of the latest AASHTO Manual on Uniform Traffic Control Devices.

2.13 BETTERMENT, EXPIRED LIFE, UNEXPIRED LIFE, SALVAGE

Procedures for reimbursing the utilities for relocation and adjustment work involving betterment, expired and unexpired life, and salvage shall be in accordance with FHPM 6-6-3-1; utility relocations, adjustments and reimbursement, as amended.

2.14 PROCUREMENT DOCUMENTATION

For a SHA project with Federal Reimbursement for the highway construction, the following documentation will be required from the Utility for the utility relocation work:

1. A copy of the current list of bidders for work of the types to be performed. An explanation of how this list was developed and maintained.
2. A copy of each request for bids sent to companies on the list.
3. A copy of each bid response received. (Minimum =3 for each major procurement area.)
4. A statement explaining why each winning bid was selected.

These copies are required only for major material procurements and major service procurements except that, where the Utility subcontracts its work, the procurement effort to select the subcontractor must also be documented as above.

Where Utilities operate with existing continuing contracts for the major procurements, and the costs are periodically audited and considered reasonable by the SHA, some or all of the document copies can be eliminated.

The document copies are not required if the utility work has been included as part of the SHA construction contract.

2.15 COST RESPONSIBILITY

Cost responsibility is determined by considering rights in the land over which or in which the utility facility is located. If the Utility owns the land or has real property interest in it, the Utility is said to have prior rights. If the land is outside of the SHA right-of-way and the SHA has no prior rights, the Utility is said to have prior rights even if the Utility has no real property interest in the land. The party without prior rights is responsible for all of the non-betterment costs related to that segment of utility relocation. Section 8-506 of the Transportation Article and Sections 58 through 63 of Article 89 provide exceptions to these rules under certain specific conditions.

Utilities which has legally determined prior rights will continue to have these rights in future projects.

To avoid complicated bookkeeping, most Utilities have elected to use a scheme whereby certain indicators are used to determine cost responsibility. For aerial systems, the indicators chosen are poles. All poles which have significant work to be performed on them due to SHA construction or safety work are assigned their proper prior rights status. Existing poles which are worked on only to accommodate the relocated utility system do not indicate cost responsibility and are not to be counted. A factor is calculated by dividing the number of poles determined to be the Utility's responsibility by the total number of poles involved. This factor, converted to a percentage is applied to the non-betterment cost of the utility work to determine the Utility cost responsibility.

Other indicators commonly used are lengths of underground cable, conduit, or pipe. Frequently, separate prior rights percentages must be assigned for each pipe or cable size to improve the equity of the cost responsibility determination.

To be consistent in the application of the indicator scheme, all cost responsibility indicators within one SHA construction contract must be treated as one project with only one cost responsibility percentage for each type of material selected as an indicator. Utility work cannot be grouped according to location, time, or personnel factors with a separate prior rights percentage for each group. The Utility may release the project as small sub-projects, but the billing must be adjusted to reflect the overall prior rights percentage after the final utility work is completed.

2.16

TEMPORARY UTILITY WORK

The cost of temporary work will be included in the utility project cost and will be subject to the same prior rights percentage as the permanent work. In a case where a Utility has no prior rights and is required to move several times because of SHA staged construction, the Utility is responsible for all of the utility relocation costs. Where the Utility has prior rights, the SHA will reimburse the Utility for all temporary work made necessary by SHA construction. Regardless of cost responsibility the SHA will cooperate with the Utility to minimize the costs of the Utility moves and the SHA construction.

If a utility has been relocated in connection with a particular project and due to a change in plans for that same project an additional relocation is required, the SHA will be financially responsible for the relocation caused by a change to the plans. This will not affect the prior rights and cost responsibility in connection with future projects at the same location.

2.17 SPARE DUCTS

When a Utility is forced to go underground with an aerial system because of SHA construction at a crossing, one spare conduit is allowed to be charged to the project to facilitate replacing a failed cable. Any additional conduits installed will be at the expense of the Utility including installation costs. Reimbursement for ducts will be paid for on the basis of the required duct footage/divided by the total installed duct footage times the total cost of the ducts.

When an existing underground duct line is relocated and the utility has prior rights, the SHA will pay for the full cost of manholes on the relocated duct line even though additional spare ducts may be installed.

2.18 PLANS

Utility plans submitted to the SHA District Engineer will be the same size as the original tracings and of good quality. Reduced prints will not be accepted. Scale will be 1"=50' except where more detail is required. Plans can be based on SHA construction plans, but must be of the same SHA orientation; no reversed tracings. Pole location, pipes, and other utility facilities must be shown accurately. Schematic plans are not acceptable except as supplements to conventional plans. As built plans for relocations showing exact installation locations will be delivered to the SHA within sixty (60) days after installation or at the time of final billing.

As built plans must meet the same specifications as above. Unless major changes require that new drawings be made, the As Built can consist simply of original prints marked in red. If changes are incorporated into the original tracings, the new prints should be marked in red to flag the changes.

2.19 EMERGENCY UTILITY REPAIRS

The SHA Traffic Division has developed a FREEWAY INCIDENT MANAGEMENT PLAN. A copy is included in the Appendix of this manual. The plan applies to all State Highways.

CHAPTER 3
UTILITY SYSTEMS

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- 3.02 UTILITY ACCOMMODATION - ARTERIALS AND COLLECTORS
- 3.03 ALTERNATE TO SLEEVING
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3.01

UTILITY ACCOMMODATION - EXPRESSWAYS

A. CROSSINGS

Underground crossings are allowed only through sleeves or conduits extending from the Right of Way Line of Through Highway to the Right of Way Line of Through Highway on the other side. Bends will be permitted on conduits which will contain electrical or communications cables. Bends in liquid and gas lines should be avoided where possible. In areas where excessive bury depths would be encountered, the District Engineer may allow a series of sleeves at different elevations. All crossings shall be made as close to a right angle to the centerline of the highway as possible. Crossings will not be allowed through drainage pipes or culverts. Crossing locations will be selected for minimum interference with existing, planned, or potential road construction and with regard to other utilities crossing in the same area. Underground crossings shall not be placed within 10 feet of SHA structures. Vents for sleeves will be located 1 foot inside the Right of Way Line of Through Highway. Where special permission has been given to use a series of sleeves, vents shall be located at least 30 feet from any traveled lane and be of breakaway construction.

Controlled access interchanges cannot be crossed. However, if one of the intersecting highways is not an expressway it will be permissible to locate a utility within the projected right-of-way of that non-controlled access highway provided the manholes are located well outside of the ramp connections. Service would have to be possible from the non-controlled access highway outside of the ramp connection area.

Where a utility already exists within the proposed right-of-way of an expressway and it can be serviced and operated without access from the roadway, it may remain if there is no conflict with the proposed construction.

Aerial crossings for Utilities being accommodated under SHA permit will be permitted at consolidated points along the Expressway. No poles or aerial appurtenances shall be located within the Right of Way Lines of Through Highway.

B. EXPRESSWAYS - LONGITUDINAL

Longitudinal utility lines are not permitted to be installed within the Right of Way of Through Highway Lines of Existing Expressways or within the Right of Way of highways that are shown in the Highway Needs inventory as future expressways.

C. EXPRESSWAYS - CONVERSION

When a highway is converted to an Interstate Expressway, all longitudinal underground utilities and appurtenances must be relocated outside of the Right of Way Line of Through Highway.

When a highway is converted to a non-Interstate Expressway, existing underground utilities which, if not relocated would exist in the right-of-way of the new highway, may not have to be relocated provided:

1. The present depth of cover, without adjustment, will be within SHA and industry specifications.
2. No future routine servicing will be required.
3. Any replacement of the facility can and will be accomplished from outside of the controlled access area.
4. The existing system is in good condition and can safely withstand the stress of highway construction and maintenance traffic.

D. EXPRESSWAYS - MEDIANS

Jacking pits and manholes may be allowed in the median at the crossing provided that their use is strictly for construction.

Any activity in the median will require special arrangements and shall be approved by the SHA District Engineer. Under FHWA and SHA regulations, no longitudinal median utility installations are allowed.

E. EXPRESSWAYS - SHA USAGE

Controlled access restrictions do not apply to facilities used specifically to operate highway appurtenances.

F. EXPRESSWAYS - RESOURCE SHARING PROJECTS

"Resource Sharing Project" is defined as a project undertaken by the State of Maryland and a Public/Private company to achieve a common goal of meeting each others communication needs including revenue to support these services.

1. Statement of Policy

This policy is to establish requirements to accommodate telecommunication facilities under "Resource Sharing Projects" within fully controlled access highway right-of-way. This policy covers placement of underground conduit/cable and above ground facilities, such as wireless antenna sites.

It shall be the policy of the Highway Administration to permit facilities under "Resource Sharing Projects" to locate within the access control limits of fully controlled access highways in accordance with this section. "Resource Sharing Projects" will be procured by the Department of Budget and Management and approved by SHA's Chief Engineer

2. State Highway Administration's qualification for participating in "Resource Sharing Project"

- (a) The company shall have the capability to respond to any type of Highway emergency, 24-hours a day, and must provide MSHA with the name, address and phone number of the company's local agent.
- (b) SHA will require a bond or other performance security before permitting any work within SHA right-of-way.
- (c) The company must be a member of "Miss Utility," the one call system of Maryland.
- (d) The company and its consultants/contractors must be knowledgeable of the MUTCD traffic control manual and traffic control requirements.
- (e) Demonstrate prior experience in the installation and maintenance of communication facilities.

3. Criteria for Longitudinal Telecommunication Installations

- (a) Longitudinal installations will be restricted to areas where the State of Maryland might otherwise install its own communication infrastructure.
- (b) The facility shall be installed underground.
- (c) Any above ground support facilities allowed within the access control limits, must be in accordance with Part 4 (Criteria for Wireless Telecommunication Installation).
- (d) Service connections to adjacent properties shall not be permitted from longitudinal utility installations located within the access control lines of a freeway.
- (e) The facilities shall present no hazard to life, health, or property, should it fail to function properly, be severed or otherwise damaged.
- (f) Facilities shall be installed in a manner which will require minimum maintenance.
- (g) The maintenance, use, or future expansion of the highway facilities will not be impaired and any cost to relocate facilities will be born by the company.

- (h) Longitudinal facilities should be installed outside the shoulder areas and as close to the right-of-way line as practical, taking into consideration the terrain and/or environmental constraints. Installation within the median area may be considered where sufficient widths exist to safely install and maintain the facility. If it is necessary to place any part of the facility within the Clear Zone area, installation may be authorized, provided the Chief Engineer approves the means of installation and imposes conditions for policing and other controls to protect highway users.
- (i) No part of the facility shall be placed in the existing shoulders without an approved exception as stated in Part 5 (Exceptions).

4. Criteria for Wireless Telecommunication Installation

- (a) Site location for placement of wireless facilities (Example mono poles/tower structures) must meet the following requirements:
 - Adequate sight distance for a safe ingress to and egress from the facility
 - The facility shall be located outside the clear zone and where they are unlikely to be struck unless shielding already exists.
 - Adequate pull off area beyond the shoulder for construction and maintenance operations of the facility
- (b) Listed below, in descending order of preference, are site locations SHA will consider; justification must be provided to go to a lower priority.
 - 1) Vehicle access to the site can be obtained from outside the through roadway and connecting ramps (e.g. access from frontage roads or cross roads)
 - 2) Within interchange, vehicle access can be obtained from the right hand side of the diagonal ramps.
 - 3) Within interchange, vehicle access can be obtained from the left hand side of the diagonal ramps.
 - 4) Vehicle access from the outside shoulder of the mainline.
 - 5) Vehicle access from the inside shoulder (median side) of the mainline.

(c) Installations within the following areas can only be approved through joint SHA/FHWA concurrence:

- Inside Loop ramps under certain circumstances, this may be the best location
- Within any freeway weave areas less than 3/4 of a mile in length
- Any locations requiring new shielding

5. Exception

Exceptions to the above provisions, which will not adversely affect safety or damage the State's facility, must be approved by the Chief Engineer and FHWA.

6. Permits

Our standard Utility Permit will be required for installation and maintenance of the facilities installed under "Resource Sharing Project".

7. Liability

This policy does not confer any liability upon the Highway Administration for any future cost of damage to, or relocation, or removal of the facility from the right-of-way for any reason. SHA will not be liable for any damage costs arising from SHA maintenance and Traffic activities within the highway right-of-way.

3.02

UTILITY ACCOMMODATION - ARTERIALS AND COLLECTORS

A. CROSSINGS

Underground crossings are allowed but, except for gravity sewers, only through sleeves, conduits or heavier walled conduit with cathodic protection. The sleeve or conduit need only extend from the ditch centerline to the ditch centerline on the other side. Bends will be permitted on conduits which will contain electrical or communications cables. Bends in liquid and gas lines should be avoided where possible. In areas where excessive bury depths would be encountered, the District Engineer may allow a series of sleeves at different elevations. All crossings shall be made as close to a right angle to the centerline of the highway as possible. Crossings will not be allowed through drainage pipes or culverts. Crossing locations will be selected for minimum interference with existing, planned, or potential construction and with regard to other utilities crossing in the same area. Underground crossings shall not be placed within 10 feet of Structures. Vents for sleeves will be located beyond the ditch line.

Aerial Crossings for Utilities being accommodated under permit will be allowed. Crossings shall be made as normal to the highway as possible. Poles shall be located one foot inside the right of way line where possible.

B. ARTERIALS AND COLLECTORS - LONGITUDINAL

Longitudinal underground lines are allowed to be installed in Arterials or sections of Arterials where access control lines do not exist. The underground utilities must be installed outside of the shoulders, preferably between the ditch centerline and a line 3 feet inside the right-of-way line to allow a safe location strip for overhead facilities. Longitudinal underground utilities shall not be placed within 10 feet of bridge foundations. The longitudinal location will be selected for minimum interference with existing, planned, or potential construction. The alignment selection shall be made with cognizance of existing and future longitudinal locations by other utilities parallel to the one being located. Where controlled access lines are present, a Utility may obtain permission to locate within these lines by writing to the SHA Chief Engineer for an exemption based on the alternative locations being cost prohibitive and/or technically infeasible. Descriptions and costs of the requested location and the alternates must be shown.

Longitudinal aerial lines for Utilities being accommodated under permit shall be located close to the right-of-way line, one foot inside, if possible.

Longitudinal electrical lines, both overhead and underground, shall be limited to 98 kilovolts rms to ground.

C. CONVERSION

When a highway is converted to an Arterial; existing underground utilities which, if not relocated, would exist in the shoulders or median of the new highway, may not have to be relocated provided:

1. The present depth of cover, without adjustment, will be within SHA specifications.
2. The existing system is in good condition and can safely withstand the stress of highway construction and maintenance traffic.

D. URBAN AREAS

In urban areas where adequate right-of-way does not exist outside the traveled roadway or sidewalk, the District Engineer may relax the restrictions of this Section to accommodate utilities if it is determined that the levels of service and safety intended for this section of highway are not unreasonably compromised.

E. MARKERS

The location of crossing facilities must be indicated by line markers located at or outside the highway right of way line except for facilities crossing non-limited access highways (1) in cities, business or residential districts or (2) where the placement of markers is not practical and would not serve the purpose for which markers are intended. Markers should indicate the name, address and telephone number of the owner of the facility and, in the case of pipelines, the substance conveyed.

3.03

ALTERNATE TO SLEEVING

Liquid and Gas Utilities wanting to cross State and Federal highways without sleeving their facilities may be allowed to do so if they propose a crossing which, in the opinion of the SHA, is as safe and serviceable as a sleeved crossing. Heavier walled pipe will be required. Special attention must be paid to the design of coatings and coverings to protect the pipe during shipping, installation, and use.

When the "Alternate to Sleeving" option is selected, the Utility must submit specific information about the proposed piping system to the District Engineer for engineering evaluation.

The following specifications shall be met:

1. Crossings will be as perpendicular as possible to the highway. Special permission will be required for any section of pipe exceeding 20 degrees to the normal line.
2. Depth of cover will be a minimum of 3 feet below any final surface in the SHA right-of-way unless a greater depth is required by industry regulations and standards.
3. The pipe within the SHA right-of-way will have as few joints and changes in direction as possible.
4. The pipe will not be installed within 10 feet of a SHA bridge structure.
5. Cathodic protection will be required for any metallic pipe. Voltage or current measuring terminals, when necessary, will be close to the right-of-way line; outside of the right-of-way line when the highway is classified as an expressway.
6. Post mounted identification signs shall be installed at the right-of-way lines directly over the pipe. Signs shall note size of pipe, transmittant, owner's name, emergency telephone numbers and any other information required by industry standards.
7. All applicable regulations and all applicable industry standards including ANSI and AWWA shall be incorporated in addition to the requirements in this section.

3.04

VERTICAL CLEARANCES

At the crossing of any roadway, the following minimum vertical clearance is required:

18 feet for communication cables, guy wires and secondary power wires below 750 volts

20 feet for voltages between 750 volts and 22KV.

21 feet for voltages between 22 KV and 50 KV.

21 feet plus .4 inch/KV in excess of 50 KV for voltages between 50 KV and 470 KV.

For longitudinal lines, the following minimum clearances will be required:

18 feet for communications cables, guy wires, and secondary power wires below 750 volts.

20 feet for voltages between 750 volts and 22KV.

21 feet for voltages between 22 KV and 50 KV.

21 feet plus .4 inch/KV in excess of 50 KV for voltages over 50 KV and up to 470 KV when allowed within SHA right-of-way.

All clearances are absolute minimums based on worst case considerations of electrical conductor loading, physical conductor loading, and ambient conditions. The minimum vertical clearance is herein defined as the shortest vertical distance of the line over any location on the SHA right-of-way.

Consult the National Electric Safety Code ANSI-C2 for additional clearance information

3.05 HIGH VOLTAGE LINE ACT

The High Voltage Line Act is applicable to conductors or poles carrying conductors which must be relocated or shielded only because of the dangerous proximity of conductors to construction equipment or structures.

Utilities designing pole line systems in the vicinity of programmed future structures or traffic control systems or areas where crane activity is expected shall design these systems to avoid later adjustments under the High Voltage Line Act.

3.06 ABANDONMENT

Obsolete utility facilities or sections thereof may be abandoned in place at the option of the District Engineer.

Manholes, valve boxes, splice boxes, and meter boxes must be removed or destroyed to a practical degree. The remains must then be backfilled and tamped in accordance with SHA specifications.

Any unused cast iron or concrete piping shall be sealed and blocked at both ends. Unused piping 8" in diameter or greater made of other material will be completely filled with grout.

There will be no abandonment of any aerial utility facilities within the right-of-way. Facilities no longer required will be completely removed.

3.07 CONSOLIDATION AND JOINT USE

A Utility is expected to consolidate its facilities when performing relocation work in order to preserve as much of the corridor as possible for the transportation function and for the accommodation of other Utilities. For the same reasons, Utilities have a strong obligation to enter into joint use agreements with other Utilities wherever possible. The SHA may require proof that crosstalk or technical problems will not allow consolidation or joint use techniques to be employed.

3.08 ENCASEMENT AND CAPPING

Encasement and capping of utilities is permitted where conditions warrant.

Encasement, in this policy, is defined as the surrounding of a carrier pipe with concrete to protect the carrier from the load imposed by the highway and its traffic. Capping is defined as the placing of a concrete slab over a facility. These techniques are useful when the carrier pipe must be used with minimal cover or when unusually heavy loading is expected as in an area where large earth moving equipment will be operating. Encasement is not to be substituted for sleeving.

3.09 DEPTH OF COVER

The minimum depth of cover for any utility shall be three (3) feet from finished grade to the top of the utility unless a greater burial depth is required by Federal or State regulations or industry codes. Minimum depths of less than three feet to the top of communication or electric vaults may be approved by the SHA where the greater depth of cover would unreasonably restrict utility operations.

3.10 TRENCHING

Where the distance from the highway edge to the longitudinal trench is less than the depth of the trench, the roadside edge must be tightly sheeted and braced securely against skeleton sheeting on the opposite or far side of the trench; or when any other circumstances exist which require tight sheeting in the opinion of the District Engineer. All wood sheeting is to be left in place and cut off one foot below the finished grade. Metal sheeting may be pulled only as tamped fill progresses.

3.11 OPEN CUT

New crossings, or replacement of existing crossings, of existing highways shall normally be accomplished by driving, jacking, tunneling, or boring under the highway without disturbing the existing pavement, shoulder or drainage. Where unusual conditions indicate use of another construction method, such method is subject to the approval of the District Engineer. The use of open cut trenches in existing roadways shall be permitted only when justified to the satisfaction of the District Engineer.

In those cases where an open cut is allowed a concrete patch conforming to the SHA Book of Standards will be required. The SHA can require resurfacing of the roadway up to a maximum of 200' on each side of a trench crossing a highway. This distance is a maximum and the District Engineer may approve resurfacing down to a minimum of 2' on each side of the trench when road, traffic and trench conditions permit.

When open cut is permitted longitudinally in the roadway, resurfacing to the width of the traveled lane(s) disturbed can be required. Some roadways may have to be resurfaced for their full width in order to provide a highway facility that is equivalent to the condition that existed prior to utility work. The District Engineer will designate the length and width of resurfacing taking into consideration the type and condition of the existing highway and traffic safety.

3.12 JACKING

Jacking is the pushing of a sleeve or casing pipe under a highway.

When the pipe crossing under the roadway is to be jacked, the hole is not to exceed the outside diameter of the pipe. The pipe shall be pushed simultaneously with the auger so as to prevent cave-ins. The use of water by itself will not be permitted. Construction methods using water in combination with other materials to provide a stable bore may be approved by the District Engineer if the type of construction is found to be suitable for the proposed installation.

The pipe shall have sufficient length to extend beyond the shoulders. No excavation for pushing pipes shall be made in the shoulder area.

A heavy timber shaft at either end of the jacking pit will be provided in order to prevent failure of the embankments and to maintain access to the jacking operation. This support shall be maintained during non-working hours in order to prevent cave-ins.

In case of a false start or damage to the over-burden, the void will be filled by pressure grouting.

3.13

TUNNELING

A heavy timber shaft at both ends of the tunnel will be provided in order to prevent failure of the embankments and to maintain access to the tunnel. The tunnel liner plates shall be installed by tunnel methods using an approved method to support the face and periphery of the excavation, which support shall be adequately strong, braced and shored. This support shall be maintained during non-working hours in order to prevent cave-ins. The contractor shall have approved plans of a method to support the face and periphery of the excavation, before doing any work.

The excavation for the tunnel liner plate shall be advanced in increments not greater than 2 feet, and the liner plates shall be installed immediately after each increment of excavation. Excavation shall be carried on in such a manner that voids behind the liner plates will be held to a minimum. Such voids shall be completely filled with grout placed under pressure.

It is a requirement that at least 2 grout plugs be provided per ring to appropriately fill voids between the liner plate and the excavation.

It is the responsibility of the specific utilities, or agencies responsible for construction work, to direct the contractor to begin the grouting operation as soon as a sufficient length of tunnel liner plate has been installed that will insure a proper seal. Grouting in general shall proceed progressively with each adjacent set of holes provided in the liner plates. All voids shall be completely filled within the working day with grout. It will be necessary that a bulkhead be made sufficient to insure the proper seal in order that all voids will be completely filled with the grout being placed under pressure. The grouting equipment shall have a minimum capacity of 1/2 cubic yard in order to assure that adequate grouting materials will be placed within a reasonable period of time to avoid the setting up of grouting from the previous grout batch. Upon completion of grouting, all holes shall be plugged with the fitting provided.

3.14

BLASTING

No blasting will be permitted within the right-of-way without prior approval of type and method by the District Engineer. The SHA will stipulate a required amount of insurance whenever blasting is approved. A qualified, licensed blasting contractor will be required.

3.15

BACKFILLING

Backfill shall be deposited in 6 inch layers and mechanically tamped in accordance with the requirements of Section 206 "Embankment" and Section 210 "Tamped Fill" of the Standard Specifications for Construction and Materials - Maryland Department of Transportation - October, 1983 as revised. When the trench is located within the paving section or the shoulder area, it is to be backfilled in compliance with the above to within one foot of the top of the sub-grade; the remaining depth of the trench shall be backfilled with thoroughly compacted crusher run stone or gravel at the option and approval of the District Engineer.

CHAPTER 4
BRIDGES
AND
OTHER STRUCTURES

- 4.01 **GENERAL**
- 4.02 **INSTALLATION ARRANGEMENTS**
- 4.03 **METHODS OF ATTACHMENT**
- 4.04 **IDENTIFICATION OF FACILITY**
- 4.05 **COORDINATION**
- 4.06 **BLASTING**
- 4.07 **ABANDONMENT**

4.01 GENERAL

Attaching utility lines to a highway structure can materially affect the structure, the safe operation of traffic and the efficiency of maintenance. Gas lines over 100 psi and pipelines carrying explosives, corrosive or flammable fluids will not be permitted to be installed on highway structures. Where it is feasible and reasonable to locate utility lines elsewhere, attachments to highway structures will not be permitted. Bridge attachment by a utility will not be considered unless the structure in question is of a design that is adequate to support the additional load and to accommodate the utility facility without compromise of highway features, including reasonable ease of bridge maintenance.

4.02 INSTALLATION ARRANGEMENTS

The Utility should submit, through the SHA District Engineer, a request to have its facility attached to the bridge, a statement describing alternative methods, and their relative costs, of getting the facility over or around the obstacle, and a description of the facility including the weight per foot and its contents. Details relative to the contents such as pressure, voltage, current, flammability, freeze point, and temperature should be included.

Appropriate devices to protect the bridge and the facility such as valves, circuit breakers, and pressure sensors should be provided and explained. The proposed method of attachment should be described with the aid of sketches detailing the proposed horizontal and vertical alignment. High quality drawings will not be required at this point in time.

If the Division of Bridge Development approves or conditionally approves the proposal, the Utility will be notified through the District Engineer. Quality full size plans shall be developed and submitted.

The cost of the utility facility installation, including the additional bridge engineering and modifications, will be borne by the utility company.

The Utility must commit to having the facility installed by the SHA contractor at the price assigned to this bid item within the SHA construction project bid, when the utility work is being accomplished as part of an administration construction project.

4.03 METHODS OF ATTACHMENT

The utility if possible, is to be supported by diaphragms between the exterior and first interior stringers so as not to be visible from

below when approaching the structure. Bridge vertical clearance must not be reduced. Entire installation including supporting brackets, etc., must be above the bottom of the highest adjacent stringer. On site drilling of bridge concrete or welding to existing steel will not be allowed. Provisions for expansion and contraction of the facility must be compatible with the expansion and contraction design of the bridge. Sleeving will usually not be required, but carrier pipes may have to have either heavier wall thickness than usual or for steel pipe have a higher yield strength by using a design factor 20% lower than that required by the US DOT Pipeline Safety Standards to provide more safety factor. Support rollers, saddles, and hangers may require padding or coating to minimize vibration noise and wear. Coating systems for Utilities must be compatible with the life expectancy of coating systems of bridge members, where applicable. Metallic conduits are to have adequate positive grounds.

1. Gas Mains up to 100 psi Operating Pressure

a. General

If there is no cut off valve on the pressure side of the main within 2000 feet of the bridge, the SHA may require the installation of a valve closer to the bridge.

b. On Structures

(1) In Sidewalks

On new structures and rehabilitated structures (new decks), gas mains may be placed within the sidewalk area, provided suitable methods acceptable to the SHA can be devised to vent the sidewalk. If encasement is used, casing pipes are to be extended through sleeves in the backwalls. Carrier pipes are to be sealed to the casing pipe at a distance of at least ten (10) feet outside the extremities of the structure. Casing pipes shall be vented to the atmosphere through a screened vent. This vent is to be located outside the shoulder line behind the guard rail.

(2) Between Beams

Where the encased carrier pipe is too large to be placed in the sidewalk, it is to be placed between beams. In this case, the casing pipe may be omitted, but the area between beams shall be vented by suitable openings whose design does not allow deck concrete and steel to be attacked by deicing salts.

Casing pipes are to be vented to the atmosphere through screened vents. Vents are to be located so that no gas will be trapped in pockets between beams and diaphragms.

Gas mains are to be supported by existing diaphragms where possible. Additional supports between diaphragms are to be placed as required. On existing structures these additional supports are to be attached to the beams by bolting. Welding to existing steel beams will not be permitted. Where a gas main must be hung below the diaphragm, it is to be supported by hangers specially designed for this use.

Attachments to concrete structures, if permitted, must conform to the general structural, aesthetic and other specific requirements for steel structures but the details thereof shall be determined on a case by case basis.

Expansion joints in the gas main shall be compatible with the expansion and contraction design of the bridge.

Sleeves through the backwalls are to be caulked to prevent seepage of water through the backwalls.

The gas main is to be protected as much as possible from electrolysis caused by stray electric current.

c. Underground in Vicinity of Structures

Gas Mains installed underground are to be encased in steel pipes where they lie within the right-of-way. The casing pipe is to extend to the Right-of-Way Lines and is to be sealed to the carrier pipe at each end. It is to be vented to the atmosphere through screened vents located at the R/W Lines. The casing pipe may be installed by jacking, or tunneling, or where permitted, by open cut.

Casing pipes are to be designed to accommodate all externally applied loads. Where the gas main is installed by tunneling beneath the highway and tunnel liner plates are installed, a solid steel casing pipe must also be used to contain and safely vent any gas escaping from the carrier pipe.

2. Water and Sewer Piping

a. General

A cutoff valve is to be placed just off the bridge in the pipeline on the pressure side of the structure. Concrete buttresses are to be placed as appropriate at each end of the structure.

b. On Structures

Water mains and sewer lines on structures are usually placed between beams, preferably between the fascia beam and the first interior beam. This will permit placing the pipe in the shoulder on the approaches to the bridge. Piping is to be supported, if possible, by the existing diaphragms. Additional supports may be placed as required. They must be attached to the existing beams by bolts. Welding to existing beams will not be allowed. The piping may be placed on top of the diaphragms with U bolts or other suitable means to hold the pipe in place. Hangers, if used, shall be of a type especially designed for this use. Expansion joints for the piping shall be compatible with the expansion and contraction design of the bridge. The piping shall be fitted with Dresser Couplings, or approved equal, to enable adjustments for expansion, contraction, and deflection. A crows-foot restraining device placed at each joint of sufficient length to facilitate removal of any section of pipe without damage or removal of an adjacent section is recommended.

Attachments to a concrete structure, if permitted, must conform to the basic structural, aesthetic and other specific requirements for steel structures but the details must be tailored to the particular concrete structure.

The piping is to pass through sleeves in the backwalls. These are to be caulked to prevent seepage of water through the backwalls. Piping up to 12 inches in diameter is to be covered with insulation to prevent freezing. No portion of the piping or its support is to project below the bottom flange of the highest adjacent beam.

c. Underground Vicinity of Structures

Underground piping shall be placed in casing pipes where pipe size and soil materials are such that flow from a broken main would jeopardize bridge supports.

Casing pipes are to extend for the full width of the right-of-way and sufficiently beyond footings so that water from a broken main will be safely discharged away from the footing. The casing pipe shall be sealed to the carrier pipe at the high end and open into a man-hole at the low end. The casing may be either steel or reinforced concrete, and shall be designed for all externally applied loads and for the internal pressure from a ruptured carrier pipe. A valve is to be installed on the pressure side of the right-of-way. The piping is to be located at least 10 feet from the nearest bridge footing, and the casing pipe is to be installed in 10 foot maximum lengths. As each length is installed, it is to be backfilled and thoroughly tamped before additional excavation is performed. The open ends of the casing pipe are to be closed at the end of each working day.

3. Power and Communication Lines

a. General

Power and communication lines to be attached to structures must be installed in conformance to National Electric Code and National Electric Safety Code requirements. Electrical lines with voltage in excess of 98 kilovolts rms to ground will not be installed on structures.

For the safety of persons using the bridge; signing to warn all users of the voltage shall be provided as set forth herein under Article 4.04.

b. On Structures

(1) In Sidewalks (or Parapets)

On new structures and rehabilitated structures, the power or communication lines placed in conduits may be installed within the sidewalk or parapet area. On an existing structure, removal and replacement of existing sidewalk and/or parapet to accommodate the lines in these areas may be acceptable, should this be the feasible alternative without cost to the Administration and with minimal inconvenience to traffic. Installations in the sidewalk or parapet areas shall conform, to the extent applicable, with Division of Bridge

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(6.09)79-70 Sheets 1 and 2 of 2 and BR-SS(0.01)-
75-13, Sheets 1 and 2 of 2, latest revision.

(2) Between Beams

Power and communication lines to be installed on structures are to be placed in conduits. Conduits are to be supported by existing diaphragms where possible. When additional supporting members are required, they are to be attached to the beams by bolts. No welding to existing steel will be permitted. Conduits are to be placed between the fascia and first interior beam, if possible. Telephone and other low voltage (50 Volts or less) lines may be placed in plastic, fiberglass, or P.V.C. conduits. High voltage lines may be placed in steel conduits, in UL listed schedule 40 or schedule 80 PVC conduit, or fiberglass reinforced epoxy conduit (not the type that is limited to underground use). All conduits shall be installed in accordance with the UL listing information, the manufacturer's instructions (in regard to use of fittings and cementing of joints), and the applicable requirements in the National Electrical Code. Conduits are to have expansion/deflection joints that are compatible with the design of the bridge. No part of the installation shall project below the bottom flange of the highest adjacent beam.

Metal sleeves through the abutment backwalls are to be provided for passage of the conduits. These are to be caulked to prevent leakage of water through the backwall.

Attachments to a concrete structure, if permitted, must conform to the general intent of the basic structural, aesthetic, and other specific requirements for steel structures but the details will be tailored to suit the particular concrete structure.

4. General Requirements for All Utilities

- a. No utility installation is to be placed on the outside of a structure where it will be visible.
- b. When a utility passes through a backwall, spaces around the metal sleeved penetration are to be filled with non-shrink grout, then caulked to prevent leakage of water.
- c. To comply with the requirement that no part of an installation may project below the bottom of the

highest adjacent stringer, it may be necessary to raise or replace existing diaphragms with smaller diaphragms, and to place additional ones as necessary to support the installation and to equal the strength of the diaphragms removed. Removal and replacement shall be carried out progressively. All connections shall be bolted. Welded connections are not permitted.

- d. Casing pipes should have provision to drain condensate.

4.04 IDENTIFICATION OF FACILITY

Any new or replacement utility facility installed from the date of this policy will include an identification marker with the first 50 feet of the facility, the last 50 feet of the facility, and at intervals of 200 feet in-between. The spacing will be adjusted to have one marker in every bay bounded by beams and diaphragms through which the utility passes.

The marker will include the name of the Utility and a description of the contents including pressures, voltages, and any other pertinent information required by industry standards. Color coding is not required. Color coding can be used, only as a supplement, and only if colors conform to industry standards.

The marker will consist of decals or stenciling onto the pipe or carrier with high quality black or white print. Lettering height will be one third the pipe diameter, but not smaller than one inch nor larger than four inches.

4.05 COORDINATION

Coordination of utility work and bridge work will usually be minimal because both jobs will usually be performed by one contractor. Where work is performed directly by the Utility or its contractor, the Utility must coordinate with the SHA contractor in order that the project schedule will not be affected. A Utility will be responsible for claims against the SHA if those claims were brought about through neglect and/or delays on the part of the Utility which caused the Contractor to incur expenses.

4.06 BLASTING

Blasting is generally not permitted within 100' of a bridge. When blasting is to be performed, the following criteria must be adhered to:

- a. Before any blasting is permitted, the Contractor, accompanied by a SHA Engineer, must inspect the existing structure, photographing, marking and noting any cracks, fractures and/or other signs of existing damage. After the completion of the blasting the structure is to be reinspected by the Contractor together with the SHA Engineer. Any enlargement of existing cracks, new cracks or other damage to the structure must be considered to have been caused by the Contractor's blasting. This additional damage must be repaired or replaced at the Contractor's expense. These repairs must be made to the satisfaction of the SHA Engineer.
- b. A seismograph is to be placed on the pier or abutment footing nearest to the point of blasting. The seismograph is to be operated by a person qualified to read and interpret the information obtained.
- c. Test shots using small charges and time delays are to be set off, noting the particle velocity as recorded by the seismograph. A maximum of two (2") inches per second will be permitted.
- d. The sizes and time delays of the main shots will be determined by the test shots, bearing in mind that the particle velocity shall not exceed 2" per second.
- e. Even though the Administration specifies the maximum readings on the seismograph, this does not relieve the Contractor of responsibility for any damage sustained by the structure.

4.07

ABANDONMENT

When a utility facility is no longer required on a bridge, the Utility will notify the District. The District Engineer will decide if that facility must be removed, the removal cost being the responsibility of the utility company.

If SHA determines the Utility should be removed, then removal shall be accomplished within six (6) months.

CHAPTER 5
TRAFFIC CONTROL

- 5.01 **TRAFFIC CONTROL PLAN**
- 5.02 **M.U.T.C.D.**
- 5.03 **TRAFFIC MANAGER**
- 5.04 **LANE CLOSINGS**
- 5.05 **FLAGGING PERSONNEL**

5.01 TRAFFIC CONTROL PLAN

The Utility is responsible to submit a carefully designed Traffic Control Plan to the District Engineer for any relocation or permit work affecting a highway. Such a plan will be based on any specific directions received from the District Engineer. The Traffic Control Plan should indicate the time during which work is to be done as well as the layout of traffic control devices. Excavations not closed the same day as opened may require the installation of concrete barriers and impact attenuators.

5.02 M.U.T.C.D.

Lights, signs, barricades, etc. shall be maintained by the Permittee in accordance with part VI of the U.S. Department of Transportation/Federal Highway Administration Manual on Uniform Traffic Control Devices and its latest Official Rulings on Requests.

This manual is available at a nominal charge from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. In addition, signing shall be in accordance with the approved Traffic Control Plan or State of Maryland Department of Transportation and State Highway Administration Standard Sheets, as applicable to the specific construction.

5.03 TRAFFIC MANAGER

The Utility shall assign an employee to serve in the capacity of a Traffic Manager in accordance with the detail sheet furnished.

5.04 LANE CLOSINGS

The District Engineer will approve the time schedules and numbers of lanes involved for lane closings. All lane closures will be during off peak hours. In areas of high speed and/or high traffic volumes, nighttime closures may be required. Flashing arrow panels as early warning devices (See State Highway Administration Specifications for arrow panel requirements) shall be used whenever a lane is closed unless considered unnecessary by the District Engineer.

5.05 FLAGGING PERSONNEL

All personnel used for flagging shall be properly dressed and qualified to perform flagging operations as outlined in the Manual on Uniform Traffic Control Devices.

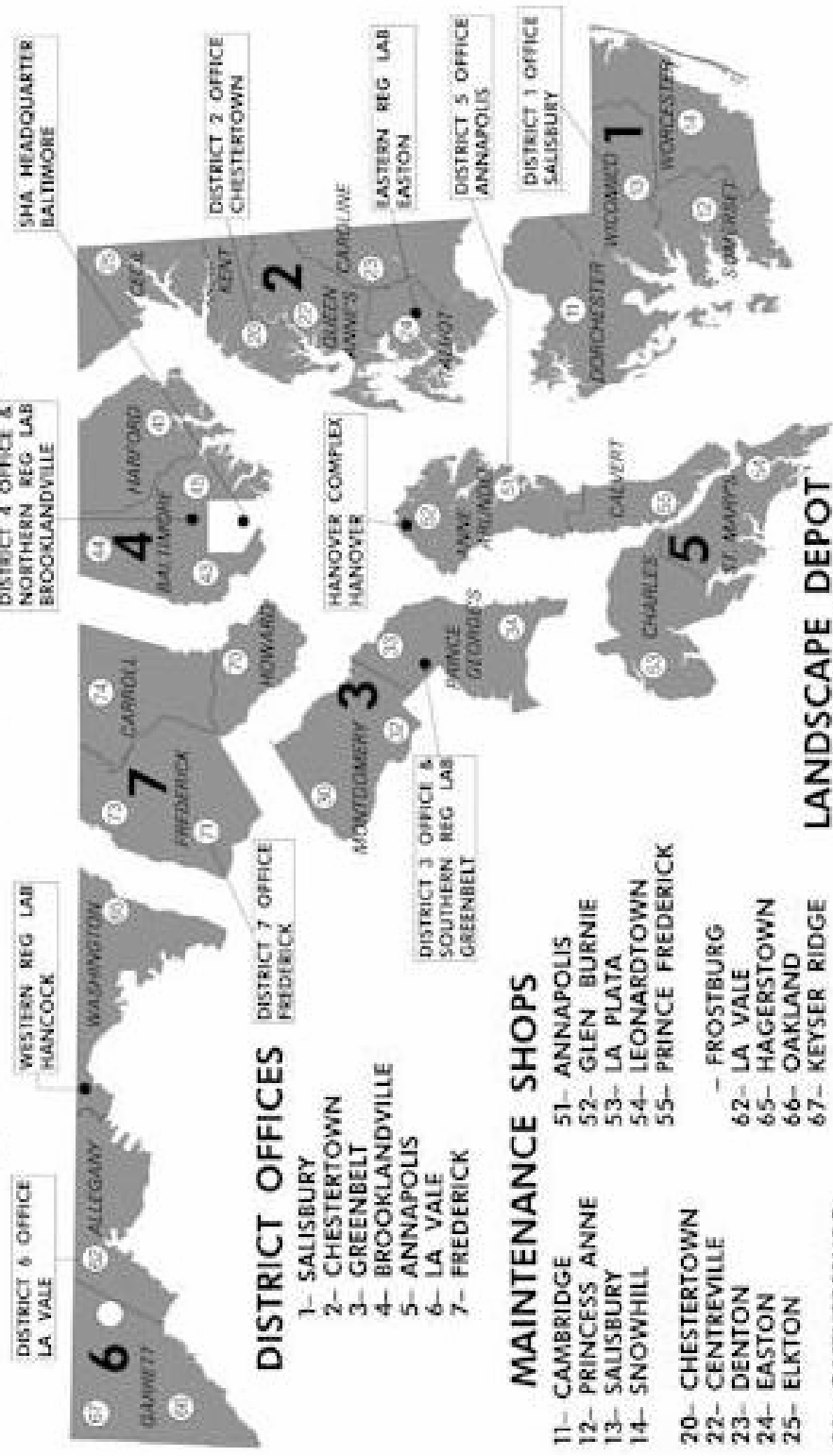
APPENDIX

ENGINEERING DISTRICTS MAP

DISTRICT ENGINEERS ADDRESSES

FREEWAY INCIDENT MANAGEMENT PLANS

S.H.A. DISTRICT OFFICES



- DISTRICT OFFICES**
- 1- SALISBURY
 - 2- CHESTERTOWN
 - 3- GREENBELT
 - 4- BROOKLANDVILLE
 - 5- ANNAPOLIS
 - 6- LA VALE
 - 7- FREDERICK

MAINTENANCE SHOPS

- 11- CAMBRIDGE
- 12- PRINCESS ANNE
- 13- SALISBURY
- 14- SNOWHILL
- 20- CHESTERTOWN
- 22- CENTREVILLE
- 23- DENTON
- 24- EASTON
- 25- ELKTON
- 30- GAITHERSBURG
- 32- FAIRLANDS
- 33- LAUREL
- 34- UPPER MARLBORO
- 41- CHURCHVILLE
- 43- OWINGS MILLS
- 44- HEREFORD
- 45- GOLDEN RING
- 51- ANNAPOLIS
- 52- GLEN BURNIE
- 53- LA PLATA
- 54- LEONARDTOWN
- 55- PRINCE FREDERICK
- FROSTBURG
- 62- LA VALE
- 65- HAGERSTOWN
- 66- OAKLAND
- 67- KEYSER RIDGE
- 70- DAYTON
- 71- FREDERICK
- 73- THURMONT
- 74- WESTMINSTER

LANDSCAPE DEPOT

- 11- CAMBRIDGE
- 45- GOLDEN RING

REGIONAL LABS

- NORTHERN REG LAB
- SOUTHERN REG LAB
- EASTERN REG LAB
- WESTERN REG LAB

- SHA HEADQUARTERS
- HANOVER COMPLEX



DISTRICT ENGINEERS ADDRESSES

MARYLAND STATE HIGHWAY ADMINISTRATION
DISTRICT ENGINEER, DISTRICT #1
Salisbury District Office
West Road P.O. Box 751
Salisbury, MD 21801
410-543-6751

MARYLAND STATE HIGHWAY ADMINISTRATION
DISTRICT ENGINEER, DISTRICT #2
Chestertown District Office
Morgnec Road - Maryland Route 291
P.O. Box 299, Chestertown, MD 21620
410-778-3061

MARYLAND STATE HIGHWAY ADMINISTRATION
DISTRICT ENGINEER, DISTRICT #3
Greenbelt District Office
9300 Kenilworth Avenue
Greenbelt, MD 20770
301-513-7300

MARYLAND STATE HIGHWAY ADMINISTRATION
DISTRICT ENGINEER, DISTRICT #4
Brooklandville District Office
2323 West Joppa Road
Brooklandville, MD 21022
410-321-2810

MARYLAND STATE HIGHWAY ADMINISTRATION
DISTRICT ENGINEER, DISTRICT #5
Annapolis District Office
138 Defense Highway
Annapolis, MD 21401
410-841-1001

MARYLAND STATE HIGHWAY ADMINISTRATION
DISTRICT ENGINEER, DISTRICT #6
La Vale District Office
1251 Vocke Road
La Vale, MD 21502
301-729-8486

MARYLAND STATE HIGHWAY ADMINISTRATION
DISTRICT ENGINEER, DISTRICT #7
Frederick District Office
P.O. Box 308 - 5111 Buckeystown Pike
Frederick, MD 21701
301-624-8102

SHA - Traffic
September 17, 1986

Freeway Incident Traffic Management Plan

A. General

There are two types of freeway congestion: that which occurs regularly (recurring type) caused by known bottlenecks and points of excessive demand and deficient capacity; and that which occurs randomly (nonrecurring type) caused by incidents such as accidents, spilled loads, disabled vehicles and other unpredictable happenings. This procedure addresses the nonrecurring congestion that results from incidents along freeways in Maryland.

The severity of the impact of the incident upon traffic flow will vary depending upon the location, the time of day, the number of lanes involved, the nature of the incident, whether or not injuries were sustained, the response time of the public agencies, the quickness with which the roadway is cleared and full traffic flow restored, and the availability of alternate routes for bypassing the scene and reducing the queuing. Work zones in existence along the freeway and affected state highways, and along the local street system, are a major consideration also.

The purpose of this presentation is to present a general procedure (Freeway Incident Traffic Management Plan) for coordinating the efforts of the State Police, State Highway Administration and other State, County, and local agencies concerned with the management of traffic during freeway incidents.

It is intended that all public agencies, local jurisdictions, public utilities, and other organizations having business or control interests along the freeway corridor be informed of the Freeway Incident Traffic Management (FITM) plan, and prepare for and organize their roles in responding to situations that will affect them. The details of such involvement will be developed over time as the primary agencies place the FITM plan into effect. It is recognized that many agencies now have procedures covering their activities during the freeway incidents.

The FITM plan includes procedures and guidelines for communication between agencies, assignment of specific agency tasks, assessment of incident severity, determination of alternate routing plans, determination of needed traffic control devices and regulations, and handling of public information dispersing to the news media, the public, local jurisdictions and other affected agencies of record.

The FITM plan will not duplicate individual agency procedures that presently exist with regard to any facet of an incident situation. Where such agency procedures exist, it is intended that the FITM plan recognizes them.

B. Objective

1. Overall Objective

- a. To minimize traffic delays and other resulting adverse effects on safety caused by freeway incidents.
- b. The objective of this FITM plan presentation is to provide an overall set of procedures for the management of traffic that are compatible with individual agency guidelines for responding to the various kinds of incidents that may occur along the highway system. To the extent possible, the agencies will cooperatively and with complementary efforts adequately detect the situation, respond to the incident site, render aid to any injured, assess the effect upon traffic flow, manage approaching traffic, and clear the roadway as quickly as possible.

2. Specific Objectives

a. Detection

- Detect freeway incidents promptly
- Analyze freeway incidents and predict their impact accurately

b. Response

- Provide prompt, accurate and coordinated communication between agencies
- Provide proper agency personnel to the scene without undue delay
- Assess freeway incident extent and traffic impacts
- Predict need for assistance, use of other agencies, need for diversion
- Provide continuing communication between agencies, and with PR interests
- Provide continuing assessment of needs
- Provide advance guide information through static or variable message signs that controls, warns and guides traffic
- Provide traffic control at the incident site review detour maps of alternate routes, considering availability of full shoulders through entire incident area.

c. Clearance

- Remove injured as per existing procedures
- Remove vehicles from lanes as quickly as possible
- Remove debris from lanes as quickly as possible
- Reopen lanes to traffic as quickly as possible
- Restore roadway to full and normal operation as quickly as possible, even if it is necessary to do so lane by lane.

C. Operations

1. Detection

- a. Police Patrols (Primary)
- b. TV and road detectors (Primary)
- c. Fire Department (Secondary)
- d. Public calls (CB, Telephone, REACT) with Police-Fire/Rescue verification (Secondary)
- e. SHA and other government radio (Secondary)
- f. Metro-traffic (Secondary)

2. Response

a. Traffic Management

- The appropriate Police agency is in overall charge of traffic management at the incident site
- Police may delegate certain decision making to others having expertise - however, police remain in overall charge.
- SHA will respond to Police requests for assistance; however, SHA will perform in a manner consistent with SHA policies, procedures and guidelines.
- Establishment of lane closures, road closures, alternate routes and detours shall be done jointly by Police, SHA and County and may involve other public roads without the concurrence of affected local jurisdictions.
- On fire and rescue emergency incidents, the extent of the road closure will be determined by the perimeter established by the Fire Department to safely conduct their operations. This will include the evacuation of surrounding areas and the closure or modification of detour routes if necessary.

b. Assessment of Incident

- *Is roadway clear?*
- *Can roadway be cleared immediately?*
- *Are there any injured?*
- *Are hazardous materials involved?*
- *Can some or all traffic continue to flow?*
- *What service is needed?*
- *How long will roadway be closed?*
- *Will both roadways be closed?*
- *What traffic control devices will be needed?*
- *Contact appropriate agency dispatcher with answers and request notification of other agencies.*
- *What agencies should be notified?*

c. Incident Involving Roadway Closure

- *An estimate of length of time of closure will be made jointly by Police and SHA based upon an assessment of the incident details by all involved agencies.*
- *Between the hours of 6 a.m. and 10 p.m. weekdays, and 10 a.m. and 10 p.m. on Saturdays, Sundays and holidays, alternate route information will be provided for all incidents that require closing two lanes or more for longer than two hours.*
- *During the other hours, alternate route information should be provided for complete closures of more than 2 hours duration.*
- *Hours and use of guide information may vary based upon joint agreement by Police, SHA and County officials.*

d. Traffic Control Devices

- *SHA will have responsibility for providing all traffic control devices*
- *Traffic control devices will be deployed in strict adherence with SHA Standards.*
- *SHA will have sole authority on traffic control device selection and application.*
- *Police may order that certain lanes, ramps or roadways be closed, and SHA will comply in a manner consistent with SHA Standards.*
- *On fire, rescue, or hazardous materials incidents closures will depend upon Fire Department needs, relayed through police officer in charge.*

- *SHA may establish traffic regulations in a manner consistent with SHA procedures for doing so in work zones.*
- *Alternate routes will be prepared on maps and temporary signing may be placed.*
- *Appropriate Police agencies will provide traffic control assistance at major intersections along the detour route.*

e. Communications

- *Incidents shall be reported immediately to the SHA - Central Communications in Baltimore by the first arriving Police agency.*
- *Other affected Police agencies shall be notified.*
- *An estimate of number of lanes affected and duration of any lane closures is to be provided.*
- *The need for SHA or County assistance will be conveyed.*
- *As needed, SHA and/or County assistance will respond to the incident.*
- *SHA will have a designated staff member on call at all times to answer Baltimore Communications, communicate with Police, participate in required decision making, and call out staff for assistance.*
- *Where SHA staff is not at the scene, periodic reports are to be made to SHA Central Communications promptly by police.*

f. Public Relations

- *Police will establish a PR procedure to alert area news media to incidents on a real-time basis.*
- *On fire, rescue, or hazardous materials incidents the existing public information procedure of the agency in overall charge shall be in effect and other agencies shall cooperate as necessary. The overall authority and responsibility for handling these incidents lies with the Fire and Rescue Incident Commander.*
- *Police Dispatcher should have info readily at hand and current for telephone requests for information - AAA, public, local jurisdictions, etc.*
- *SHA and others will report their activities and findings to Police for PR effort.*

3. Clearance

a. Incident Involving Injury

- For medical treatment and assistance
 - ❖ Police/Fire/Rescue follow normal operating procedures.
 - ❖ SHA call for Police and Rescue personnel.
 - ❖ Others call for Police and Rescue personnel.

b. Maintenance

- Incidents involving hazardous materials shall be handled and cleaned up as per existing procedures.
- SHA will be responsible for incident cleanup within the highway, and for any needed maintenance of damaged facilities.
- Cleanup activities and any needed road, bridge or highway appurtenance repair will be coordinated with the Police officer in charge.
- All maintenance activities will be accomplished following standard SHA procedures.